

WHAT IS CLAIMED IS:

1. A method of testing content, comprising:
parsing, by a parser, two or more documents in tandem on an element-by-element basis, whereby the elements of each of the documents are sequentially parsed;
upon parsing each of the respective sequential elements in a first document of the two or more documents and each of the other documents, comparing the respective parsed elements to one another; and
on the basis of the comparison, determining whether the documents are at least equivalent.
2. The method of claim 1, wherein each of the other documents is a current response from an application responding to a submitted request and the first document is a control document retrieved from storage and previously returned from the application in response to the request.
3. The method of claim 1, wherein the parser is a SAX parser.
4. The method of claim 1, further comprising, upon determining that the documents are not equivalent, issuing a user warning.
5. The method of claim 1, further comprising, disregarding, for purposes of the comparing, elements of at least one of the documents identified by predefined attributes identifiable by the parser.
6. The method of claim 1, wherein determining whether the documents are at least equivalent comprises determining whether the documents are structurally equivalent and wherein comparing the parsed documents comprises:
comparing sequentially occurring non-character elements in the respective documents; and
disregarding character elements; and

wherein determining whether the documents are equivalent comprises determining whether the non-character elements are the same.

7. The method of claim 1, wherein determining whether the documents are at least equivalent comprises determining whether the documents are at least one of structurally equivalent and content equivalent.

8. The method of claim 7, wherein the documents are foreign-language counterparts of one another; and wherein comparing the parsed documents comprises comparing sequentially occurring elements in the respective documents; and wherein determining whether the documents are structurally equivalent comprises determining whether the non-character elements are the same; and further comprising determining whether the documents are content equivalent by determining whether the character elements are different.

9. The method of claim 8, upon determining that the documents are content equivalent, issuing a warning of a possible mistranslation of content in at least one of the documents.

10. The method of claim 1, wherein the documents are XML documents containing XHTML.

11. The method of claim 1, wherein the documents are well-formed documents having well-defined content structures identifiable by a parser parsing the documents.

12. The method of claim 1, further comprising:
applying one or more test expressions to at least one of the documents; and
determining whether the one or more test expressions are satisfied.

13. The method of claim 12, wherein the one or more test expressions are XPATH queries.

14. A method of testing and validating user interface content, comprising:
 - submitting a request to an application;
 - in response to the request, receiving a response document from the application;
 - retrieving from storage a control document previously returned from the application in response to the request;
 - sequentially determining each element of the response document and the control document;
 - for at least some of the respective sequentially determined elements from the respective documents, comparing the elements to one another; and
 - on the basis of the comparison, determining whether the elements are equivalent.
15. The method of claim 14, wherein the documents contain XHTML and the elements are nodes of XHTML content of the respective documents.
16. The method of claim 14, wherein at least two response documents are returned in response to the request and wherein the steps of sequentially determining each element, comparing the elements and determining whether the elements are equivalent is performed are performed for all of the documents.
17. The method of claim 14, wherein comparing the elements to each other comprises:
 - comparing sequentially occurring non-character elements in the respective documents; and
 - disregarding character elements.
18. The method of claim 14, further comprising, for at least some of the respective sequentially determined elements from respective documents, disregarding the elements.

19. The method of claim 14, wherein sequentially determining the elements of the documents comprises parsing the respective documents and wherein the documents are well-formed documents having well-defined elements identifiable by a parser parsing the documents.
20. The method of claim 19, wherein the parser is a SAX parser.
21. The method of claim 14, wherein the documents are foreign-language counterparts of one another and further comprising:
 - upon determining that the documents are equivalent, issuing a warning of a possible mistranslation in at least one of the documents.
22. The method of claim 14, wherein a first document is a control document previously returned from an application in response to a user action, and then captured, stored and subsequently retrieved from storage to determine a first structural element for comparison.
23. The method of claim 22, wherein a second document is a live document currently returned from the application in response to the user action during a session in which the application is being accessed.
24. The method of claim 14, wherein the documents are XML documents containing XHTML.
25. The method of claim 14, further comprising:
 - applying a test expression to the documents, the test expression being configured to select specific portions of the documents; and
 - comparing the specific portions for equivalence.
26. The method of claim 25, wherein sequentially determining the elements comprises parsing the respective documents.

27. The method of claim 14, further comprising:
applying one or more test expressions to at least one of the documents; and
determining whether the one or more test expressions are satisfied.
28. The method of claim 27, wherein the one or more test expressions are
XPath queries.
29. The method of claim 27, wherein at least one test expression is configured to
determine a presence of a specific value of a structural element of the second
document.
30. The method of claim 27, wherein sequentially determining the elements
comprises parsing the respective documents.
31. A method for testing and validating content in a user interface, comprising:
 - a) performing a first testing and validation technique, comprising:
parsing a first document with a first parser;
parsing a second document with the first parser;
comparing the parsed first document to the parsed second document;
on the basis of the comparison, determining whether the documents are
equivalent; and
 - b) performing a second testing and validation technique, comprising:
parsing the second document with a second parser;
applying one or more test expressions to the parsed second document; and
determining whether the one or more test expressions are satisfied.
32. The method of claim 31, wherein determining whether the documents are
equivalent comprises determining whether the documents are structurally
equivalent.

33. The method of claim 31, wherein determining whether the documents are equivalent comprises determining whether selected portions of the documents are equivalent in content.

34. The method of claim 31, wherein the first parser is at SAX parser.

35. The method of claim 31, wherein the first parser is at SAX parser and the second parser is a DOM parser.

36. The method of claim 31, wherein the first parser is at SAX parser, the second parser is a DOM parser and the one or more test expressions are XPATH queries.

37. A computer readable medium containing a program which, when executed, performs an operation for testing content, comprising:

 parsing a first document being well-formed and having identifiable structures;

 parsing a second document being well-formed and having identifiable structures;

 comparing the parsed first document to the parsed second document; and

 on the basis of the comparison, determining whether the documents are at least structurally equivalent.

38. The computer readable medium of claim 37, wherein the parsing is done by a SAX parser.

39. The computer readable medium of claim 37, further comprising, upon determining that the documents are not structurally equivalent, issuing a user warning.

40. The computer readable medium of claim 37, further comprising determining whether the documents are content equivalent.

41. The computer readable medium of claim 37, wherein comparing the parsed documents comprises:

comparing sequentially occurring non-character elements in the respective documents; and

disregarding character elements; and

wherein determining whether the documents are structurally equivalent comprises determining whether the non-character elements are the same.

42. The computer readable medium of claim 37, wherein the documents are foreign-language counterparts of one another and wherein comparing the parsed documents comprises:

comparing sequentially occurring elements in the respective documents; and

wherein determining whether the documents are structurally equivalent comprises determining whether the non-character elements are the same; and further comprising determining whether the documents are content equivalent by determining whether the character elements are different.

43. The computer readable medium of claim 42, upon determining that the documents are content equivalent, issuing a warning of a possible mistranslation of content in at least one of the documents.

44. The computer readable medium of claim 37, wherein the documents are XML documents containing XHTML.

45. The computer readable medium of claim 37, further comprising:
applying one or more test expressions to at least one of the documents; and
determining whether the one or more test expressions are satisfied.

46. The computer readable medium of claim 45, wherein the one or more test expressions are XPATH queries.

47. A computer, comprising:

a user interface testing tool comprising at least a first parser and a comparator, and operable to perform at least a first testing technique in which the tool is configured to:

- retrieve a first document from storage, the first document having been previously returned from an application in response to user input;
- request and receive a second document from the application during a current session in which the application is being accessed by the user interface testing tool;
- parse the first document using the first parser;
- parse the second document using the first parser;
- compare, by the comparator, the parsed first document to the parsed second document; and
- on the basis of the comparison, determine at least whether the documents are at least structurally equivalent.

48. The computer of claim 47, wherein the documents are well-formed and have identifiable structures.

49. The computer of claim 47, wherein the parsing is done by a SAX parser.

50. The computer of claim 47, wherein the user interface testing tool is further configured to issue a user warning upon determining that the documents are not structurally equivalent.

51. The computer of claim 47, wherein the user interface testing tool is further configured to determine whether the documents are content equivalent.

52. The computer of claim 47, wherein the user interface testing tool compares the parsed documents by:

- comparing sequentially occurring non-character elements in the respective documents; and

- disregarding character elements; and

wherein the user interface testing tool determines whether the documents are structurally equivalent by determining whether the non-character elements are the same.

53. The computer of claim 47, wherein the documents are foreign-language counterparts of one another and wherein the user interface testing tool compares the parsed documents by:

comparing sequentially occurring elements in the respective documents; and

wherein the user interface testing tool determines whether the documents are structurally equivalent by determining whether the non-character elements are the same; and further determines whether the documents are content equivalent by determining whether the character elements are different.

54. The computer of claim 53, wherein the user interface testing tool is further configured to issue a warning of a possible mistranslation of content in at least one of the documents upon determining that the documents are content equivalent.

55. The computer of claim 47, wherein the documents are XML documents containing XHTML.

56. The computer of claim 47, wherein the documents are well-formed documents having well-defined content structures identifiable by the first parser.

57. The computer of claim 47, further comprising:
applying one or more test expressions to at least one of the documents; and
determining whether the one or more test expressions are satisfied.

58. The computer of claim 57, wherein the one or more test expressions are XPATH queries.

59. The computer of claim 47, further comprising:
parsing the first and second documents with a second parser;

applying one or more test expressions to at least one of the documents
parsed by the second parser; and

determining whether the one or more test expressions are satisfied.